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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/067,106

02/04/2002

Abraham R. Matthews

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EXAMINER

PHUNKULH, BOB A

ART UNIT

PAPER NUMBER

2616

DATE MAILED: 11/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/067,106

Applicant(s)

MATTHEWS ET AL.

Examiner

Bob A. Phunkulh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-25,30,31 and 34-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-25,30,31 and 34-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2006 is/are: a) ☒ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/4/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This communication is in response to applicant's 08/28/2006 amendment(s)/response(s) in the application of **MATTHEWS et al.** for "**SYSTEM AND PROTOCOL FOR FRAME RELAY SERVICE OVER THE INTERNET**" filed 02/04/2002. The amendment/response to the claims have been entered. Claims 4, 26-29, and 32-33 have been canceled. No claims have been added. Claims 1-3, 5-25, 30-31, 34-46 are now pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4-5, 9-11, 30-31, 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Rajakarunanayake et al.* (US 6286049), hereinafter *Rajakarunanayake*, in view of *Sasson et al.* (US 6,798,785), hereinafter *Sasson*.

Regarding claims 1, 30, 47, *Rajakarunanayake* discloses a system for communications over the Internet, comprising:

at least one router connectable to a first user terminal (DSLAM 122A for routing the packets from CPE to the ATM/FRAME switch 232, see figure 3 and col. 5 lines 14-17);

at least one subscriber virtual frame relay switch (VS) connectable to the at least one router (FRAME RELAY switch 232 may be use in place of ATM switch, see figure 3 and col. 5 lines 14-17); and

at least one virtual router (VR) to connect the VS to the Internet for communications between the first user terminal and a second user terminal over the Internet (Broadband Access Gateway/Routers 260, where the routers may be virtual routers or gateways, see figure 3 and col. 3 lines 38-46; routing data between CPEs over the Internet is inherent feature).

Rajakarunanayake fails to explicitly discloses encapsulating frame relay header and payload information of the frame relay message within a payload transport protocol and encrypting and authenticating all packets of the payload transport protocol.

Sasson, on the other hand, discloses encapsulating frame relay header and payload information of the frame relay message within a payload transport protocol and encrypting and authenticating all packets of the payload transport protocol (see figure 8 for step by step encapsulating frame relay into TCP protocol). Encryption and authentication in packets communication is well known in the art to provides security over public packet network.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to implement the teaching of *Sasson* in the system taught by *Rajakarunanayake* in order provides data communication of dissimilar networks where the entire frame from one network is simply enclosed in the header

used by the link-layer protocol of the other network.

Regarding claim 2, *Rajakarunanayake* inherently discloses at least a second router connectable to the second user terminal (DSLAM 122B for routing the packets from CPE 110C or CPE 110D, see figure 3); at least a second VS connectable to the second router (FRAME RELAY switch 232 may be use in place of ATM switch, see figure 3 and col. 5 lines 14-17); and at least a second VR to connect the second VS to the Internet for communications between the first user terminal and the second user terminal (Broadband Access Gateway/Routers 260, where the routers may be virtual routers or gateways, see figure 3 and col. 3 lines 38-46; routing data between CPEs over the Internet is inherent feature).

Regarding claim 4, *Rajakarunanayake* discloses a payload transport protocol for communicating payload information between the first user terminal and the second user terminal (see figure 5).

Regarding claim 5, *Rajakarunanayake* discloses a switch-to-switch signaling protocol to communicate signaling and other information between the at least one VS and a second VS (the connection-oriented packet network i.e. ATM or Frame Relay establishes Virtual Circuits between the switches, see col. 1 lines 37-45).

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Regarding claim 9, *Rajakarunanayake* discloses an operation support system to control establishment and operation of a communications link between the first user terminal and the second user terminal (the ATM-PVC is establish between CPE and a destination as shown figure 2 as doted lines, see figure 3).

Regarding claim 10, *Rajakarunanayake* discloses the at least one VS implements signaling between other VSs in a virtual private network (VPN) for coordination of information transfer between VSs over the Internet and encapsulation of frame relay header and payload information for communication between users over the Internet the connection-oriented packet network i.e. ATM or Frame Relay establishes Virtual Circuits between the switches, see col. 1 lines 37-45, and the BAG encapsulated the FR messages in order to transmit the packet over Internet 136, see col. 9 lines 39-52).

Regarding claim 11, *Rajakarunanayake* inherently discloses information is transferred between users in frames, each frame containing a sequence number to preserve the order of the frames (data to be transmitted over a packet network is divided into numerous packets –thus the packets must have sequence numbers in order to obtain original data at the receiving end, see col. 9 line 1-13).

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Regarding claim 31, *Sasson* discloses stripping any overhead information in the frame relay message and encapsulating valid frames in the FOIP header (see figure 3).

Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination *Rajakarunanayake-Sasson* of as applied to claim 1 above, and further in view of *Watt* (US 5,781,532).

Regarding claims 6-8, *Rajakarunanayake-Sasson* fails to disclose a data link connection identifier (DLCI) to provide routing information to establish a communications link between the first user and the second user and to provide service parameters associated with the communications link, wherein the DLCI service parameters comprise at least one of a frame size, a committed information rate (CIR), a committed burst rate (Bc), burst excess size (Be) and committed rate measurement error (Tc); and a local management interface (LMI) associated with the VS to respond to status inquiries and make status inquiries regarding other components of the system.

Watt, on the other hand, discloses a data link connection identifier (DLCI) to provide routing information to establish a communications link between the first user and the second user and to provide service parameters associated with the communications link (see col. 1 lines 23-24), wherein the DLCI service parameters comprise at least one of a frame size, a committed information rate (CIR), a committed burst rate (Bc), burst excess size (Be) and committed rate measurement error (Tc) (col. 4 lines 20-27); and a local management interface (LMI) associated with the VS to

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respond to status inquiries and make status inquiries regarding other components of the system (col. 3 lines 45-54).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made includes the teaching of *Watt* in the system taught by *Rajakarunanayake-Sasson* for providing bandwidth fairly between active conversations using these parameters in frame relay network –thus providing reliable frame relay data transmission and protection for high priority calls.

Claims 3, 34, 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination *Rajakarunanayake-Sasson* of as applied to claim 1 above, and further in *Ylonen* et al. (US 6438612), hereinafter *Ylonen*.

Regarding claim 3, 34, 45, *Rajakarunanayake-Sasson* fails to disclose the communications over the Internet is via an Internet protocol security (IP Sec) tunnel.

Ylonen, on the other hand, discloses that two nodes communication over the Internet is via an Internet protocol security (IP Sec) tunnel (see col. 2 lines 60 to col. 3 line 30).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made provides the teaching of *Ylonen* especially communication over the Internet via Ipsec tunnel in the system taught by *Rajakarunanayake-Sasson* in order to comply with IETF standard while providing cryptographic authentication and confidentiality of traffic between two communication network nodes.

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Claims 12-14, 16-19, 21-22, 35-37, 39-44, are rejected under 35 U.S.C. 103(a) as being unpatentable over *Rajakarunanayake* in view of *Ylonen* et al. (US 6438612), hereinafter *Ylonen*.

Regarding claims 12-13, 35-36, *Rajakarunanayake* discloses a plurality of routers (a plurality of DSLM 122, which each functions as a router, for routing packets from the CPEs 110 to the GAB, see col. 2 lines 19-21), each router connectable to at least one user terminal;

a plurality of Internet protocol service switches (IPSXs), each IPSX is connectable to at least one of the plurality of routers (the combination of ATM/Frame Relay switches 232 and BGR 260, see figure 3) and comprises:

a subscriber virtual frame relay switch (VS) (FRAME RELAY switch 232 may be used in place of ATM switch, see figure 3 and col. 5 lines 14-17); and a virtual router (VR) to connect the VS to the Internet for communications between the user terminals associated with each of the routers over the Internet (Broadband Access Gateway/Routers 260, where the routers may be virtual routers or gateways, see figure 3 and col. 3 lines 38-46; routing data between CPEs over the Internet is inherent feature).

Sasson fails to disclose the communications over the Internet is via an Internet protocol security (IP Sec) tunnel.

Ylonen, on the other hand, discloses that two nodes communication over the Internet is via an Internet protocol security (IP Sec) tunnel (see col. 2 lines 60 to col. 3 line 30).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made provides the teaching of *Ylonen* especially communication over the Internet via Ipsec tunnel in the system taught by *Sasson* in order to comply with IETF standard while providing cryptographic authentication and confidentiality of traffic between two communication network nodes.

Regarding claims 14, 37, *Rajakarunanayake* discloses a payload transport protocol for communicating frame relay information between the VSs (see figure 5).

Regarding claims 16, 39, , *Rajakarunanayake* discloses the transport protocol is based on user datagram protocol (UDP/IP) (see figure 5).

Regarding claim 17, 40, *Rajakarunanayake* discloses he frame relay protocol is encapsulated in a frame relay over Internet protocol (FOIP) header that is then encapsulated in UDP (FRAME RELAY protocol (layer 2) may be use in place of ATM protocol (known in the art as layer 2 protocol) and transmit over the Internet 136 using IP protocol (known in the art as layer 3 protocol), see figure 3 and col. 5 lines 14-17).

Regarding claims 18, 41, *Rajakarunanayake* discloses a switch-to-switch signaling protocol (SSFOIP) to communicate signaling and other information between the different VSs and to provide periodic synchronization of the different VSs (the connection-oriented packet network i.e. ATM or Frame Relay establishes Virtual Circuits

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between the switches, see col. 1 lines 37-45).

Regarding claims 19, 42, *Rajakarunanayake* discloses the SSFOIP (Frame Relay over IP) is based on UDP/IP and operates in parallel with the transport protocol (FRAME RELAY switch 232 may be use in place of ATM switch, see figure 3 and col. 5 lines 14-17; and the BAG translating the packet before routing to the packet destination, see col. 9 lines 39-52).

Regarding claims 21, 43, *Rajakarunanayake* inherently discloses the system comprises of an operations support system (OSS), the OSS establishing a permanent virtual circuit (PVC) between each of the user terminals in a virtual private network (VPN) (the ATM-PVC is establish between CPE and a destination as shown figure 2 as dotted lines, see figure 3).

Regarding claim 22, 44, *Rajakarunanayake* inherently discloses the OSS installs the address information in each VS to communicate with all the other VSs in the VPN (PVC 252A and any one of 252D, 254A-254B, 256, see figure 3).

Claims 15, 20, 23, 38, 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination *Rajakarunanayake- Ylonen* of as applied to claim 12 or 37 above, and further in view of *Watt* (US 5,781,532).

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Regarding claims 15, 20, 23, 38, 46, *Rajakarunanayake- Ylonen* fails to disclose a data link connection identifier (DLCI) to provide routing information to establish a communications link between the first user and the second user and to provide service parameters associated with the communications link, wherein the DLCI service parameters comprise at least one of a frame size, a committed information rate (CIR), a committed burst rate (Bc), burst excess size (Be) and committed rate measurement error (Tc); and a local management interface (LMI) associated with the VS to respond to status inquiries and make status inquiries regarding other components of the system.

Watt, on the other hand, discloses a data link connection identifier (DLCI) to provide routing information to establish a communications link between the first user and the second user and to provide service parameters associated with the communications link (see col. 1 lines 23-24), wherein the DLCI service parameters comprise at least one of a frame size, a committed information rate (CIR), a committed burst rate (Bc), burst excess size (Be) and committed rate measurement error (Tc) (col. 4 lines 20-27); and a local management interface (LMI) associated with the VS to respond to status inquiries and make status inquiries regarding other components of the system (col. 3 lines 45-54).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made includes the teaching of *Watt* in the system taught by *Rajakarunanayake- Ylonen* for providing bandwidth fairly between active conversations using these parameters in frame relay network –thus providing reliable frame relay data

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transmission and protection for high priority calls.

Claims 24-25 rejected under 35 U.S.C. 103(a) as being unpatentable over *Rajakarunanayake-Ylonen* in view of *Estberg et al.* (US 6,148,337), hereinafter *Estberg*.

Regarding claims 24-25, *Rajakarunanayake-Ylonen* fails to disclose the system further comprises of a customer network manage system to permit subscribes to monitor service status, generate repots and forecasts for network planning and service modification.

Estberg, on the other hand, disclose providing a customer network manage system to permit subscribes to monitor service status, generate repots and forecasts for network planning and service modification in VPN network over Frame Relay (see 1 lines 38-62, and col. 3 lines 33-41).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made includes the teaching of *Estberg* in the system taught by *Rajakarunanayake-Ylonen* in order provides the VPN subscribers with ability performs limited network management functions.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any response to this action should be mailed to:

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Crystal Plaza Two, Lobby, Room 1B03
Arlington, VA 22202.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Bob A. Phunkulh** whose telephone number is **(571) 272-3083**. The examiner can normally be reached on Monday-Tuesday from 8:00 A.M. to 5:00 P.M. (first week of the bi-week) and Monday-Friday (for second week of the bi-week).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor **Wellington Chin**, can be reach on **(571) 272-3134**. The fax phone number for this group is **(571) 273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Bob A. Phunkulh
Primary Examiner
TC 2600
Technology Division 2616
November 13, 2006

BOB PHUNKULH
PRIMARY EXAMINER